UWAG Bottom Ash Transport Water Sampling Protocol

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Purpose

To collect bottom ash transport water and source water used to sluice the bottom ash for metals and mercury analysis. Bottom ash transport water should not be contaminated with fly ash transport water or any other waste stream with potentially high metals or mercury content. The purpose of this project is to characterize the pollutants in bottom ash transport water and the contribution of pollutants from the source water used to sluice the bottom ash. If fly ash transport water or ash pond water is used to sluice the bottom ash, these samples are not needed for this project.

Equipment

- Pre-cleaned Trace Metal Certified 1L wide mouth HDPE bottle
- Pre-cleaned Trace Metal Certified double bagged 10L (or larger carboy)
- DI Water for Hg and Metals Field Blanks – Consult with your lab on volumes needed
- Pre-cleaned Trace Metal Certified Bottles for sample collection – Consult with your lab for volumes and type needed

Sample Collection

Refer to EPA Method 1669 for Clean Sampling Requirements.
I used "clean" procedures, but no Tyvek suits or masks were used. Collect the bottom ash sluice water with the pre-cleaned 1L wide mouth using "clean hands" (clean gloves). Have an assistant (dirty hands) open the outer bag on 10L carboy. Clean Hands then opens the inner bag and removes lid in order to pour BA sluice sample into carboy. Replace the carboy lid and inner bag; Dirty Hands will replace the outer bag. Collect an evenly spaced number of samples over the entire sluicing event. Do not collect the initial flush or the flush at the end of the sluicing event.

For Example: A plant sluices bottom ash for approximately 1 hour twice a day, with a 15 minute flush at the beginning and end. Once the flush has started watch for the sluice water to turn dark (presence of bottom ash), then collect a grab every 5 minutes until the carboy is full. For a 1 hour sluice collect 12 grabs over the hour, each grab will be approximately 800 ml.

After collecting the grabs, allow the carboy to sit for at least 1 hour in order to settle the solids. Pour your samples off the top of the carboy. Do not shake the carboy; we only want the sluice water and not the solids.

Field Blanks will also be collected for the low level Hg and Metals analysis. Collect the Hg Field blanks in the field near the bottom ash sluicing area. Pour DI water into Hg Field Blank sample bottle, using clean hands/dirty hands procedure. Collect the metals field blank near the area where you will pour off the samples from the carboy.

Carboy Pour Off

Once the composite sample has settled, you will need to pour off the carboy into the individual sample containers. If possible it is best to use the plant's lab or other indoor area to poor off the

carboy for the individual sample collection. Prevent any contamination from dust, mist, or chemicals.

Sample Preservation
Low Level Hg (Method 1631) and Metals (EPA 200.8) – All preservation should be done in the lab under clean conditions. It is not necessary to ice the samples.

Routine Metals (Method 200.7) – samples can be preserved in the field with HNO_3 to a $pH<2$, but it is recommended that the samples are shipped unpreserved and the lab preserve upon receipt.

Sample Hold Times
Hg Method 1631E - 90 days
Metals Methods 200.8 and 200.7 – 180 days

Analytical Methods
Method 1631E – Low level Hg

Method 200.8 – Low Level Metals
Sb, As, Be, Cd, Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Tl, Sn, Sr, Ti, Zn

Method 200.7 – Routine Metals
Al, B, Ba, Ca, Fe, Mg, Mn, Na, K

Metals listed are recommendations for each method. Consult with your lab on which elements they recommend for each method. Most labs will run a complete scan (all available elements) for a fixed price.

Other
- Caution should be taken when collecting the BA sluice, due to the high flow rate and possible high temperature.
- All Hg Samples should be collected in glass.
- Ensure samples are properly packed for shipment to reduce the chance of glass sample bottles breaking.
- Only pour the clear liquid from the top of the carboy into the sample containers. Avoid transferring any solid matter.
- A source water sample (water used for sluicing BA) should be collected the same day as the BA sluice samples. The source water sample results will be used to compare the BA sluice samples to background concentrations. Source water can be collected directly from the river or the recommended sampling point. Collect source water directly into sample bottles using the clean hands/dirty hands procedure. The same analytical methods and analyte list should be used for the source water and the BA sluice water.